SYMONS'S

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EARLY SNOW.

The fall of snow which occurred over most of Southern England on October 19th, was so heavy and so early as to have attracted considerable attention. I gave in the *Times* of Oct. 21st, details of the earliest date of snow in 25 winters, 1806-31, from Howard's Observations, and in 23 winters, 1858-80, from my own.

The most important items in those two tables, including every entry of snow as early as Oct. 20th, are as follows :—

1806–31
- 1819. Oct. 21.—A sharp fall of snow in afternoon, and a heavy one at night.
- 1825. Oct. 20.—A little snow at 4 p.m.
- 1829. Oct. 7.—A considerable fall of snow between 1 and 3 p.m.

1859–80
- 1859. Oct. 22.—Snow in afternoon, but total fall less than a tenth of an inch.
- 1880. Oct. 19.—Snow began just before midnight, and continued till noon of 20th. Total depth probably 4 or 5 in. Greatest depth lying on ground, under 2 in.

It will be seen that there is an interval of twenty-eight years between these two sets of observations. Miss Ormerod's recently published *Cobham Journals* enables us to supply very nearly all the missing years. The following are all the notices in it of snow, on any date in October, between 1832 and 1850 :—

1836. Oct. 29.—Snow 2 in. deep, remaining on the ground for five days.
1838. Oct. 13.—Snow.
1842. Oct. 26.—Snow.
1848. Oct. 18.—Snow.

I believe the only instance of importance is that on October 29th, 1836. Immediately after my letter appeared in the *Times*, the Rev. L. Blomefield (formerly Jenyns) kindly called my attention to this fall, and to the account of it given in his excellent "*Observations in Meteorology.*" The following is the paragraph :—

"The last week in October, 1836, was remarkable for its severity, there being sharp frosts at night, and a heavy drifting fall of snow, which lay on the ground [at Swaffham Bulbeck, Cambridge] to the depth of several inches for days afterwards. I never remember any such snow as this so early in the season before. Newmarket Heath was so covered with snow (it being the time of the

races), that it was actually found necessary to sweep the course before the horses could run. A great deal of fruit was still ungathered, and the apples in many places were hanging upon the trees, coated with snow."

Whistlecraft, in his *Climate of England*, reports that at Thwaite, near Bury St. Edmunds, Oct. 29th, 1836:—

"A fall of snow for many hours, to near a foot in depth, with sharp frost (28°) at night. 30th.—Sharp frost and some snow.

G. J. SYMONS.

THE RAINFALL OF OCTOBER, 1880.

The fall of rain last month was exceptional in several respects, an interim note upon the subject may therefore be acceptable.

In some parts of England the fall was greatly in excess. We do not yet know of any instances more remarkable than some of those quoted in *British Rainfall* 1865, page xxxi., as having occurred in the south-east of England in that year, but that month and the past bear some resemblance. The following table shows the stations arranged in the order of their excess above their average.

DIV.	COUNTY.	STATION.	1880.				1865.		
			Total.	Average, 1870-79.	EXCESS.		Total.	EXCESS.	
					Amt.	Per cent.		Amt.	Per cent.
			in.	in.	in.		in.	in.	
II.	Kent	Acol, Margate	8·08	2·26	5·82	258	6·75	4·49	199
VII.	Lincoln ...	Boston	7·14	2·03	5·11	252	4·62	2·59	127
II.	Surrey ...	Wimbledon	8·46	2·51	5·95	237	5·97	3·46	138
II.	Kent	Bromley Common..	8·15	2·92	5·23	179	6·95	4·03	138
II.	Kent	Maidstone, Hntn. C.	6·82	2·46	4·36	177	7·81	5·35	217
II.	Kent	Hythe	10·25	3·86	6·39	166	9·43	5·57	144
II.	Hants. ...	St. Lawrence, I of W	8·26	3·62	4·64	128	10·96	7·34	203
I.	Middlesex	Camden Square ...	5·78	2·70	3·08	114	6·20	3·50	130
VI.	Hereford.	The Graig, Ross ...	5·75	2·83	2·92	103	4·98	2·15	76

The greatest fall in the British Isles during the month, was 10·92 in., at Glenthorne, Lynmouth, Devon, but although there is, unfortunately, not yet a long average at that station, the fall of eleven inches there is not nearly so exceptional as that of eight inches at Margate.

In the English Lake district, in the south-west, and centre of Scotland, and in many parts of Ireland, the month was extremely dry. At the Stye, in Cumberland, where the average fall in October is about seventeen inches (432 mm.) the fall was only 2·70 inches, or one-seventh of the average.

In Kircudbright, also, and in Dumfriesshire, the fall was scarcely noe-seventh of the average, and the following note from Mr. Carmichael, of Arthurstone, Meigle, shows the state of drought in parts of Perthshire and Forfar:—

"The rainfall for October has been very little here, the total for the month being 0·80 in the garden gauge and 0·81 at the house. At Balbrogie ford, where the Isla and the Ericht rivers meet and join in one, they have not been so low for 19 years. The Isla drains Glenisla and the Grampians surrounding it, the Ericht drains Glenshee and Glenbeg and also Strathardle. This shows, I think, a very dry month in the mountain district."

There were three considerable falls of rain during the month.

(1.)—On the 4th, preceded and followed by small falls of about a quarter of an inch on 3rd and 5th. The falls on the 4th exceeded 2 inches at several stations in Devon, Cornwall, and S. Wales, the largest amounts were 3·22 in. at Glenthorne, 2·50 in. at Langtree Wick, Torrington, Devon, and 2·44 in. at Babbacombe, Torquay, Devon.

(2.)—A local fall in Kent on the 9th of between 2 and 2½ inches.

(3.)—A rather widespread and heavy fall occurred on the 26th and 27th. The centre of it seems to have been between Holyhead and Kingstown, for the Dublin and North Wales returns are nearly equal. The following are a few of the heaviest falls:—

DIV.	DIVISION.	STATION.	FALL ON OCTOBER			
			25th.	26th.	27th.	28th.
			in.	in.	in.	in.
V.	Devon	Dartmoor	·55	2·00	1·19	—
IX.	York, W. R.	Arncliffe	—	·37	2·10	1·07
,,	,, ,,	Ripon	—	·47	2·15	1·30
XI.	Radnor	Rhayader	·13	2·16	2·40	·15
,,	Montgomery	Llanwddyn	—	1·50	2·04	·34
,,	Canarvon	Port Madoc	—	·50	3·06	·75
,,	Isle of Man	Douglas	·05	1·03	2·00	·13
XX.	Waterford	Waterford Gas Works	·22	1·02	2·51	—
XXI.	Meath	Monkstown	—	·78	2·33	·47
,,	Dublin	Phœnix Park	...	1·11	3·03	·26
,,	,,	Fitzwilliam Square	...	·78	2·74	...
,,	,,	Navan (Balrath)	...	1·60	2·00	·04

THE RONALDS LIBRARY.

THE Society of Telegraph Engineers celebrated on Wednesday last the completion of a very large and useful work. The late Sir Francis Ronalds, F.R.S., was one of those clear sighted, and clever, but unobtrusive men, whose merits are usually discovered and recognized about fifty years after the bulk of their work is done, and therefore generally it is after they are dead. Ronalds lived to the

age of 95, and hence he lived long enough to see some of his merits recognized, for he was knighted in the 83rd year of his age, and received a Government pension of *seventy five pounds* per annum.

Without reopening the question of priority in the introduction of the Electric Telegraph, we may just mention that Ronalds worked a system of Electric Telegraph in 1816, and published the description of it in 1823, whereas the patent of Messrs. Wheatstone and Cooke was not taken out until 1837.

In 1843 Ronalds was appointed first Director of Kew Observatory, which appointment he held until 1852. And it was while holding that office, that he arranged the excellent set of Atmospheric Electric Apparatus described in Walker's translation of Kaemtz's Meteorology, and also that he devised the system of photographic registration of meteorological insruments which, with some improvements, is now adopted by the Meteorological Council.

During the whole of his life Ronalds was a persevering collector, not merely of books and tracts upon electricty and magnetism, but also of every scrap of information respecting the literature of the subject on which he could lay hands. And, although meteorology was with him a collateral subject, he collected a considerable mass of information upon that head. After resigning his appointment at Kew, Ronalds spent many years on the Continent, with his eyes and his pocket ever ready for any rarity requisite for his library. The final result was a library containing about 9000 separate works, and a catalogue containing more than 13,000 entries.

Ronalds at first contemplated leaving this library to the Royal Society, but considering that its library already contained many of the works, and that, therefore, a great accumulation of duplicates would result, it was thought better to offer it to the Society of Telegraph Engineers. That Society, though of recent formation (1872), has rapidly assumed a leading position among Scientific Societies; it accepted the Library on the conditions laid down in the deed of gift, viz., that the Library should "be preserved entire," that it should be rendered "of as much use as possible to such persons as should be engaged in the pursuit of electrical science and other cognate sciences," that all the books should be bound, and that the catalogue should be printed entire.

On Wednesday, Nov. 10th, the President of the Society (Mr. W. H. Preece, M.I.C.E.), invited the Members of the Society, and others interested in the subject, to celebrate the completion of the work. We are glad to be able to say that we consider it in every respect worthy both of Ronalds and of the Society of Telegraph Engineers. Concerning the catalogue, a well printed volume of 564 pages, as it has been our duty, for another object, to read every one of the 13,000 entries it contains, we ought to speak with some authority, and we are glad to say that it is exceptionally accurate, and a work whereof not only the editor (Mr. Alfred J. Frost), but the editor's countrymen have reason to be proud.

INTERNATIONAL METEOROLOGY.

The International Meteorological Committee, appointed by the Congress of Rome, held its first meeting at the Observatory, Berne, from the 9th to the 12th September. All the members of the committee, nine in number, were present. Their names are as follows :—

Prof. H. Wild (President), Mr. R. H. Scott (Secretary), Profs. Buys Ballot and Cantoni, Capt. de Brito Capello, Profs. Hann, Mascart, and Mohn, and Dr. Neumayer. The following is a brief notice of the most interesting results of the meeting :—

The International Comparison of Standard Instruments.—The original scheme for this undertaking was based on the supposition that thirty-six European Observatories would take part in it, each paying a contribution of about £15.

The number of acceptances of the proposal, up to the date of the meeting, was, however, insufficient to justify the committee in commencing the comparison, and it was, therefore, determined to recommend each country to carry out a careful comparison of its own standard instruments, with those of neighbouring countries.

The International Simultaneous Observations.—The proposal recently made by the Chief Signal Office, Washington, to change the time of this observation, from 0h. 43m. to 0h. 8m. p.m., was discussed, and it was resolved to accede to the proposal, notwithstanding the inconvenience which the change might entail in individual systems of observation.

The Proposal for Concerted Arctic Observations.—The International Polar Commission, appointed at Hamburg, in October, 1879, presented a report of a meeting it had recently held at Berne, and announced that Count Wilczek and Lieut. Weyprecht had consented to postpone their expedition to Nova Zembla until 1882, in order to allow of more time for the organization of the other expeditions destined to co-operate with them. The International Committee resolved to aid the scheme by all the means in their power.

The Publication of Data referring to Rain, &c.—A proposal, made by Dr. Köppen, for an improved method of publication of information relating to rain, snow, &c., was ordered to be circulated among the different observatories, in order to obtain opinions as to its suitability.

Telegraphic Communications with the Atlantic Islands.—Capt. Hoffmeyer submitted a resolution as to the desirability of laying cables to the Faroes, Iceland, Greenland, and to the Azores. The committee expressed their hope that it might be found possible to lay these cables, which would be of very great importance for the weather service of Europe.

The publication of Average Values for Meteorological data.—The committee, at Capt. Hoffmeyer's suggestion, recommended that all meteorological organizations should publish regularly the

mean values for the most important elements for the Telegraphic and International Stations.

The Catalogue of Meteorological Literature.—A proposal, made by Dr. Hellmann, of Berlin, for the preparation of such a catalogue was considered. Dr. Hellmann stated that he had calculated the cost of preparation of the catalogue of printed books and memoirs at about £550, and that of printing and publication (1,000 copies) at about £750.

Several of the members of the committee promised to aid in carrying out the scheme, if it were undertaken, by the preparation of catalogues of the literature which exists in their own individual languages. The subject was finally referred to Mr. Scott and Dr. Hellmann, with power to act if they found sufficient encouragement.

As to the catalogue of unpublished records of observations no definite resolution was adopted.

International Tables for the Reduction of Observations.—It was stated that a publishing firm in Leipzig was prepared to print and publish such tables at its own risk, if the copy were delivered to them. The subject was referred to Prof. Mascart and Prof. Wild for the preparation of a definite plan for the calculation of the tables.

The committee will include in its report, which will shortly appear, a notice of the progress made in each country in carrying out the resolutions of the Congress at Rome.

It only remains to say that the members of the committee were most hospitably entertained by the Federal Council, and by the Municipality of Berne.

THE SANITARY INSTITUTE.

SOME DEFICIENCIES IN OUR KNOWLEDGE RESPECTING HEALTH RESORTS.

(Concluded from p. 139.)

And I think that few persons have the least idea of the number of the mineral springs and sea bathing places in the British Isles. Many years ago when investigating the rainfall at some of our Health Resorts, I compiled a list of those that I then knew of; the total number was rather more than three hundred, but having learnt of many since, and made the list far more extensive than any that I know of, I have inserted it in this paper ir the hope that it may prove an acceptable contribution to our Transactions.

At the outset, however, it is necessary to consider what constitutes a health resort. The definition is by no means easy. Are all places where mineral springs exist to be called health resorts? if so, scores of places where there is not the slightest accommodation for visitors, and of which 999 persons out of every 1000 have never heard, must be included. Are all seaside towns and villages to be considered health resorts? some of them are, we fear, far from being either salubrious or adapted for receiving visitors. Are we to exclude all places which have neither mineral springs nor sea bathing? if so, we must exclude some localities which are extremely well adapted for the restoration of persons suffering the penalty of "life at high pressure."

I think, that in this matter, as in most others, no hard and fast line is possible, and the course which I have adopted is, therefore, an intermediate one.

(The list of about 500 health resorts will appear in the Transactions).

I purpose dwelling chiefly upon our ignorance of the climates of our health resorts. But before passing to that, I wish to say a few words respecting the literature of the subject. How is it that we have no standard work in which the merits and demerits of all our mineral springs, sea-side bathing places, and health resorts are impartially set forth?

I am far from ignoring the thousands of more or less ambitious books, each demonstrating that Slowcombe-on-Sea is equally well adapted for a winter and for a summer health resort, that it possesses every natural advantage, and that the sanitary arrangements are perfect. Added to this, there is a gradually rising stream of prospectuses from so-called hydropathic establishments which, without exception, chant the praises of the places whence they emanate. But all these are necessarily, inevitably one-sided.

And our general treatises, where are they? I may be referred to Sir James Clark's *Sanative Influence of Climate*, an excellent book for its date, but the last edition was issued thirty-four years since, and it only devotes 70 pages to British Health Resorts.

Dr. Granville's *Spas of England*, 3 vols., published in 1841, is far more voluminous, but if the gossip and verbiage were struck out, it would leave little, if any, more information than is given by Sir James Clark, and all of it, be it remembered, is forty years old.

The more recent works, though I do not wish to say anything against them, leave much to be desired. What have we to compare with Lombard's *Traité de Climatologie Médicale*, in three or more volumes? with Dr. von Graefe's *Jahrbucher für Deutschlands Heilquellen und Seebäder?* or with the sumptuous quarto published for several years in Paris with the title of *Album universel des Eaux Minerales, des Bains de Mer, et des Stations d'Hiver.*

Not one of these, however, comes up to my own idea of what is required, and, what is more practical, of what I believe it would pay to publish. In the first place, I do not think that any one person is competent to write the book. Because (and I like to prove each proposition I lay down) it would not be easy to name a person who would command universal respect as (1) a physician, (2) a water analyst, (3) a geologist, (4) a meteorologist, (5) a sanitary engineer, and (6) a statistician. And I hold that a proper, full and true report upon Scarborough, for example, ought to contain data on all these heads, and it ought to give a map (with altitudes) of each town on the scale of at least two inches to the mile, one or two views, details of the water supply and drainage.

Let me, however, say a few words as to how I think it possible to carry out this scheme to its full extent, and to defray the cost of the perhaps half-a-dozen volumes which it would fill.

In the first place, everything should be done to suppress the personal element in the book. It should be brought out under the auspices of some public body, perhaps a committee comprising representatives of the leading Medical, Sanitary, and Scientific societies would command the widest respect. Then there must be one editor in chief, and sub-editors for each of the branches already named. And every paragraph throughout the volume should be initialled, so that no responsibility be shirked.

As the preliminiary basis of the publication, an exhaustive series of questions (together with an explanatory note), should be sent to the official representative of each town—the Mayor where there is one, whom failing the Chairman of the Local Board, or, in the absence of both, the leading medical practitioner. But these statements would merely serve as a basis; there must be a personal visit by an inspector appointed by the committee, and information must be collected from all possible sources.

As regards the mineral waters, properly attested specimens must be taken of each, and all must be analyzed under the supervision of a single analyst, and the results published on a uniform system.

I have not shown how the cost of this is to be met. Probably it would not be more than the sum spent yearly in advertisements by two or three of the largest hydropathic establishments. See for instance the hundreds of boards

respecting Ben Rhydding at the railway stations throughout the country. Fifty pages of advertisements in the last volume would do no harm to the book, and there is scarcely any price per page at which it would not be profitable to the hydropathic establishments and the larger hotels to insert illustrated prospectuses.

Such a work as this would be a necessity for the consulting physician, and would be of great interest to scientific men; well illustrated, and treating as it would do of many of the most beautiful spots in our country, it would find its way into the homes of the wealthy, and as the standard authority upon the subject, it would find a sale on the Continent, in our Colonies, and in the United States.

I am aware that I have sketched a large, and perhaps I shall be told a visionary scheme. Be it so. There is no harm in placing upon record that which is expedient, even if we cannot carry it out at once. We have pointed out the data required, and in the course of time they will be accumulated.

And now for the Climatology. Of course, one essential feature of the work is a full report on the climate of each health resort. I am sorry to say that that is what scarcely anyone can give. This a sweeping statement, which, of course, I must prove to be true. In the first place, to show you that this is no temporary whim on my part, I ask permission to read a paragraph which I wrote in 1866, and published in 1867 in a little book (long since out of print), entitled *Rain, How, When, Where and Why it is Measured*:—

"It would be of immense benefit to the medical profession and the public at large, to know with truth and absolute impartiality the relative climates of our various health resorts, but at present very little is known. There are a host of local treatises on 'The Climate of Blankwater,' &c., but they are mostly advocates of the place whence they take their title. We have also some general treatises on the subject, but they are necessarily based on the returns made by persons interested in the popularity of the places in which they reside, and most of them have placed their instruments as well as they know how, but the result is diverse indeed. How, then, can the indications of their instruments be comparable? Moreover, there have been cases strongly indicating a desire to 'make things pleasant,' by slight departures from impartiality in recording the observations, and hence (unjustly) there is a widespread want of confidence in returns from fashionable health resorts. This should not be. Might it not be removed by the local authorities at each appropriating a small portion of open space to the erection of a set of meteorological instruments, properly verified and properly mounted, and having them regularly recorded by one or more persons? Let the book of observations be always open to public inspection, let whoever takes the observations add his initials, and let the instruments be always readily accessible on application. This proposal might cost each town £10 or so, not more, and it would soon confirm the accuracy of most of those, on all of whom the records of *some* have cast suspicion."

The great defects of the meteorological observations of byegone years arise from the fact that the importance of absolutely identical methods of observation and record was not fully realized, or at any rate was not acted upon. It may have been thought that with a staff of voluntary observers it was difficult to ensure absolute uniformity, and that if a paid observer breaks rules the matter is soon rectified, but when the observer buys all his instruments, and offers of his own free will to send you copies of the observations he makes, it is less easy to obtain strict uniformity. At least, I suppose it must have been so, though my own experience of amateur observers is that they will do almost anything that they are asked. However, whatever may have been the cause, there is no denying the fact that absolutely rigorous identity in the mode of observation is of very recent date. But since getting a Royal Charter, proper offices and a paid staff, the Meteorological Society has been doing everything in its power towards ascertaining the precise characteristics of English climate. It has now between 80 and 100 stations,

with identical instruments, all mounted uniformly, all read at the same instant of local time, recorded and in every respect discussed upon a uniform system, all the instruments tested and verified, and every station visited by the Society's inspector.

A map of the stations and a set of the instruments are now before you. And from the former you will see what is the deficiency which I wish to see rectified. Take the coast from the Thames to the Land's End. We find the following sea-bathing places without any records being sent to the Society respecting their temperature or humidity :—Herne Bay, Westgate, Margate, Broadstairs, Deal, Dover, Folkestone, Sandgate, Hythe, Hastings, St. Leonards, Seaford, Brighton, Littlehampton, Bognor, Ryde, Sandown, Shanklin, Freshwater, Weymouth, Charmouth, Lyme Regis, Axmouth, Seaton, Exmouth, Dawlish, Looe, and Penzance. Twenty-eight places on the South Coast alone, each doubtless possessing features different from every other, slight, probably, in some cases, as, for example, Littlehampton and Bognor, but extremely marked in others, as, for instance, Margate and Penzance, or to take two nearer places, Ryde and Shanklin.

I started by stating that I wished to obtain rather than to afford information. Have I not finished by showing a wide field for useful work ?

THE WEATHER IN OCTOBER.

During the 1st, a rather deep depression was formed over the North Sea, whence it moved away E. ward to the S. of Sweden during the following night, causing a rapid decrease of pressure over the S. of Scandinavia, and a brisk one over the whole of these Islands and France, so that the anticyclone which lay in the S.E. at the close of September disappeared, and the highest readings were reported from France. The bar. continued falling during the next 24 hours in all parts of W. Europe, except Scandinavia, and several small subsidiary disturbances passed in a S.S.E. direction down the North Sea, one of which occasioned moderate or fresh N. or N.W. gales in the N. and N.W. of our Islands. The large area of high pressure over France broke up entirely, and readings over Ireland became comparatively high. The charts of the 4th shewed two new depressions—one over the Bay of Biscay, and the other over the Gulf of Bothnia, the former producing moderate to strong E. winds over the Channel, S.W. England, and the whole of Ireland, the latter moderate N. winds over Scandinavia and N. Scotland.

Very unsettled weather, with remarkably heavy rain, was experienced during the week (5th–11th), except in the W. and N.W., where it was moderately fine, but cold.

The disturbance, whose centre was over the mouth of the English Channel on the 4th, moved a little N. during the night following, and became much deeper, so that, while E. gales set in over the N.E. and N. parts of England and Ireland, the wind shifted to S. and S.W in the Channel, and temp. rose considerably. By the morning of the 6th this centre had reached the Humber, and by the 7th was over the Baltic. Pressure began to increase in its rear ; but this rise was checked by the advance to over the Scilly Islands of a shallow disturbance, which, at that stage of its progress, began to move W. ward, the bar. hence rising over the whole of W. Europe. During the night (8th–9th), however, this depression suddenly passed E. wards, its centre being, at 8 a.m. on the 9th, near Jersey, where the bar. fell ; but at all other places pressure still increased. In the course of the 11th, the depression travelled a little to the E. of Jersey (and caused fresh or strong gales from the E. or N.E. on the English S.E. coast) but moved W. wards again subsequently, till it occupied much the same position as it did on the morning of the 9th. It soon afterwards disappeared, and then the bar. rose again over the whole of W. Europe, the charts of the 11th shewing a large area of high pressure over the northern parts of our Islands and the North Sea.

Temp. was less than the average throughout our Islands, the deficit ranging from 5° in central England to 1° in S. England. The highest max. (67°)

occurred at Barnstaple on the 11th. The lowest of the min. (29° or 30°) were reported from central Ireland and Glenalmond.

Rainfall was equal to the mean in S. Ireland, but less in the W. and N.W. Heaviest fall: 3·72 inches in London; lightest fall: 0·02 at Londonderry.

Bright sunshine shewed a decrease everywhere, except N. Ireland and E. Scotland. Max. duration: 43 hours at Glenalmond; min. duration: 3 hours at Leicester, 5 hours at Hillington.

The weather during the week (12th–18th) was very fine and dry in the S.W. of our Islands; dry, though not nearly so bright, elsewhere. Rather thick fog prevailed at times in S.E. England and S. Scotland.

Pressure decreased rather briskly over the Netherlands and N.E. France in the course of the night (11th–12th); but in the W. of our Islands and France the bar. rose, the area of highest pressure hence moving somewhat to the W. The charts of the 13th shewed that this disturbance over France had disappeared, while a depression had advanced from the W. over Lapland. This passed away during the 13th, and the bar. rose over all W. Europe, the change being greatest on the English S.E. coast and over France; but an equally general decrease of pressure took place on the next day. Over these Islands and their neighbourhood the change was uniform; but varied over Scandinavia from 0·02 to 0·29 (where pressure was previously lowest), so that a broad band of high pressure lay over Great Britain, N. France, and N. Germany, while over N. Scandinavia a large area of low readings was shewn, and a small subsidiary disturbance over the Skager Rack. On the 15th, the bar. rose a little over Scandinavia, owing to the disappearance of the depression; but over these Islands and France, the mercury continued to decrease slowly and steadily. During the 18th and following night an important disturbance passed from W. to E. to the N. of our Islands, and at 8 a.m. on the 19th, was over S. Scandinavia; a subsidiary depression appearing simultaneously over Scotland. An anticyclone (30·1) was formed over the S.W. coasts of our Islands, the English Channel, and N. France.

Temp. slightly above the mean in E. Scotland, but below it elsewhere; in central England the deficit was as much as 5°. The highest of the max. were 62° at Loughborough, 61° at York, Nottingham, and Prawle Point, and 60° at Kelstern. The lowest of the min. occurred at Markree Castle on the 12th, when the ther. receded to 29°; but at most other places the min. took place on the 15th.

Rainfall was nil in S.W. England; much less than the average elsewhere, except at Nairn, where the total was 0·05 inch in excess, and at Hastings, where the deficit was only 0·01.

Fair weather was experienced over the greater part of our Islands during the week (19th–25th); but in S. and S.W. England it was dull and very wet. Snow fell in many places, and on 20th was very heavy in S.E. England; also hail showers at some places.

The small depression which was over our S.W. coasts on the morning of the 19th, grew much deeper during that day, and a brisk decrease of pressure took place over these Islands and France (the fall exceeding half-an-inch at Jersey). This disturbance passed E.N.E. up the English Channel on the 20th, and was over Denmark on the 21st. The bar. consequently rose over the whole of our Islands; but during the night following a deep depression advanced across the Bay of Biscay (its centre being near Brest at 8 a.m. on 22nd), causing a rapid decrease of pressure on our S.W. coasts, and in N.W. France, and a slight fall over the whole of England and Ireland; while in Scotland and the countries to the E. of the North Sea the bar. rose. The charts of the 23rd shewed the depression to be over the Channel. During the day, however, it passed out again to the Atlantic, beginning rapidly to disperse. A very brisk rise of the bar. then took place, the change varying from 0·6 inch in the Channel to less than 0·10 inch in Scotland; but during the night (24th–25th) pressure decreased considerably in the N. of Scotland, owing to the arrival over that district of a small, though well-marked, depression; while in France, and on the E. shores of the North Sea, the bar. rose, so that the area of highest bar. readings was

now over N.W. France. The general conditions on the next day were extremely unsettled, owing to the existence over the Scilly Islands and the extreme S.W. of Ireland, and, in the next place, over Denmark, of depressions which occasioned a decrease of pressure over all W. Europe, the change being greatest on our S.W. coasts and Denmark. The area of highest readings was now shifted to S. France; and in N. Scotland, whence the disturbance of the 24th had passed on E. wards, an area of comparatively high pressure was formed.

Temp. considerably less than the mean in all districts, the deficit ranging from 8° in N. Ireland to 11° over S. and central England. The highest of the max. was 55° at Prawle Point; and the lowest of the min., 19° at Markree Castle, and 21° at Parsonstown and Brookeborough.

Rainfall above the average in S. and S.W. England, and E. Scotland; much less elsewhere. Heaviest fall: 3·84 inches at Falmouth; lightest fall: 0·03 at Markree Castle.

Bright sunshine was of longer duration in all districts except S. and S.W. England. Max. duration: 43 hours at Glenalmond; min. duration: 13 hours at Hillington, 14 in London.

Very cold, unsettled, and boisterous weather prevailed during the last five days of the month. Remarkably heavy rain fell at nearly all places; snow and hail showers were reported from the north, and a thunderstorm from Southampton. The 31st was, however, much less unsettled.

The depression noticed as being in the S.W. on the morning of the 25th, became very deep during the night (26th-27th). It remained stationary, however, and appeared to "throw off" small subsidiaries, which travelled slowly eastward up the Channel and over S. England. The bar. fell everywhere except in Scandinania; but the areas of high pressure in S.W. France and N.W. Scotland were still shewn. The wind was S.W. over France and S.W. England; but E. in all other parts of England and over Ireland, and N. in Scotland: in the W. of our Islands it blew a hard gale. The charts of the 28th exhibited a remarkable depression, passing E.N.E. over these Islands, having, apparently, two centres of 28·7 and 28·8 respectively, one over the British Channel, the other over the Humber. The decrease of pressure over our Islands varied from 0·73 at York, and 0·71 inch at Spurn Head, to 0·08 at Sumburgh Head. Gradients were very steep on nearly all coasts, and severe gales were general—that in the W. being N. in direction; W. and S.W. in the S. and S.E.; S. on our E. coast; and E. or N.E. on the more N. shores. In the rear of this disturbance (which by the morning of the 29th had its centre over Denmark), the bar. rose quickly; the gale subsided, except at Holyhead, Spurn Head, Capa Gris Nez, and Brussels, where the wind continued fresh or strong; and the weather improved generally. During the 30th, pressure increased somewhat over S.W. England, N. and central France; but in the north a slight decrease took place, caused by the passage across those parts of some small disturbances. On the 31st, the bar. fell slightly over Denmark and N. Germany, which fall was caused by the advance to that neighbourhood of a depression that was over the Shetland Isles on the previous evening (30th). Over the whole of our Islands, France, and Scandinavia pressure increased, an area of high and uniform readings being formed over France and our W. coasts, while gradients over the North Sea were somewhat steep.

Temp. several degrees below the average throughout our Islands, the deficit ranging from 5° to 8°. The highest of the max. was 60° at Dover, and the lowest min. was 23° at Bawtry; at most other places the min. ranged from 24° to 29°.

Rainfall less than the mean in N. Ireland; equal to it in E. Scotland; but elsewhere the amounts were very considerable. Heaviest falls: 3·89 at Dublin, 3·74 at Holyhead, 3·54 at Shrewsbury; lightest fall: 0·11 at Glenalmond.

Bright sunshine was less prevalent in most places than during the week preceding. Max. duration: 25 hours at Valentia; min. duration: 45 minutes at Leicester.

Lowestoft. H. E. M.

WILL-WI'-THE-WISP.*

To the Editor of the Meteorological Magazine.

SIR,—I think you said in the Magazine some time ago that you had never met with, *in the flesh*, the man who had seen the *ignis fatuus*, or Will-wi'-the-Wisp. I beg to enclose a paragraph which I cut out of the *Fife News* newspaper some weeks since, and you will see from it that it has been seen there. I can also tell you that in 1832, when a boy herding cows on the farm of Crosshouses, near Kingskettle, Fifeshire, that I had frequent opportunities of seeing Will-wi'-the-Wisp, or "Spunkie," as it is called in the old Doric.

On the farm of Crosshouses was a bog, about 300 yards from the door of the dwelling-house, and it was in the bog—or rather over the bog—that I saw the light moving about. The best description I can give of it is that it resembled that of a lantern being carried about by a person for some twenty or thirty yards. Sometimes I had seen it move zig-zagly about these distances, and sometimes in a straight line, and always at the same rate of speed—that of a person's usual speed when walking.

My grandfather frequently saw it. Sometimes, when coming in from suppering the horses, he would cry in haste to come out and see "Spunkie" in Pilkim Moss, when I, and the others at the fire-side sitting, would run to the door to see it. When all of us were either less or more afraid of the wandering light, many times I have gone to bed at once—*after prayers though*—and buried my head among the bed-clothes that "Spunkie" might not get hold of me; for every person regarded the phenomenon with dread.

I saw it also in a bog called Powglass, on the farm of Dawnfield, close by Crosshouses, several times in the same year, 1832. I have lived since, as a gardener, in four counties in England, and four in Scotland, but never saw "Spunkie" in either of them. I must say, however, that no bogs—or rather quagmires, for Powglass bog partook more of the quagmire—were in close enough proximity to where I lived in those eight counties, to give me a chance of seeing Will-wi'-the-Wisp again.

Powglass bog and Pilkim bog have been both drained, and "Spunkie" is no longer seen there.

I have one or two cousins still living in the parish of Kettle, who, I am certain, will vouch for the truth of what I have stated to you.

Regarding the paragraph enclosed, I think I can procure the address of the writer of it, on application to the office of the *Fife News*, Cupar Fife. DAVID ELDER, Gardener.

Silverbut Hall, Hawick, June 21st, 1880.

"STAR.

"WILL-WI'-THE-WISP.—Under the rapid march of improvements in draining, Jack-wi'-the-Lantern, or Will-wi'-the-Wisp, has of late years been rarely seen in this quarter. One dark evening last week, however, the fiery imp was all activity in the locality of the peat moss, to the west of this, and created some excitement by his 'flitting, flaunting flame.' Decayed vegetable or animal

*See *Met. Mag.*, Vol. xiv., pp. 163.

matter, it is well known, is the cause of this light. In damp churchyards, in the olden time, where dead bodies were not buried far under the surface, such lights poured forth, and among our forefathers were familiarly known as 'dead lichts.' In a dark age, and while such lights were so frequently cast forth, it is scarcely to be wondered at that superstitious beliefs were closely associated with such appearances."—*Fife News.*

SUPPLEMENTARY TABLE OF RAINFALL IN OCT., 1880.

[For the Counties, Latitudes, and Longitudes of most of these Stations, see *Met. Mag.*, Vol. XIV., pp. 10 & 11.]

Div.	STATION.	Total Rain.	Div.	STATION.	Total Rain.
		in.			in.
II.	Dorking, Abinger	6·28	XI.	Corwen, Rhug	5·67
,,	Margate, Acol	8·08	,,	Port Madoc	5·18
,,	Littlehampton	7·41	,,	Douglas.....	5·82
,,	St. Leonards	8·07	XII.	Carsphairn	2·32
,,	Hailsham	6·37	,,	Melrose, Abbey Gate...	2·96
,,	I. of W., St. Lawrence.	8·26	XIV.	Glasgow, Queen's Park.	·84
,,	Alton, Ashdell.....	5·42	XV.	Islay, Gruinart School..	1·45
III.	Great Missenden.....	...	XVI.	Cupar, Kemback.....	1·95
,,	Winslow, Addington ...	5·54	,,	Aberfeldy H.R.S.	4·44
,,	Oxford, Magdalen Col...	5·30	XVII.	Tomintoul.....	...
,,	Northampton	5·50	,,	Keith H.R.S.	7·26
,,	Cambridge, Merton Vil.	5·13	,,	Forres H.R.S.	3·52
IV.	Harlow, Sheering	4·58	XVIII.	Strome Ferry H.R.S....	2·58
,,	Diss	3·57	,,	Auchnasheen H.R.S. ...	...
,,	Swaffham	4·93	,,	Lochbroom	4·70
,,	Hindringham	4·90	,,	Tain, Springfield.....	2·02
V.	Salisbury, Alderbury...	5·16	,,	Loch Shiel, Glenfinnan.	4·48
,,	Calne, Compton Bassett	4·40	,,	Dalwhinnie H.R.S.....	...
,,	Beaminster Vicarage ...	7·50	XIX.	Lairg H.R.S.	3·14
,,	Dartmoor, Princetown..	8·81	,,	Altnabreac H.R.S.	3·52
,,	Langtree Wick	6·56	,,	Watten H.R.S.	4·07
,,	Lynmouth, Glenthorne.	10·92	XX.	Fermoy, Glenville	3·34
,,	St. Austell, Cosgarne...	8·28	,,	Tralee, Castlemorris ...	1·44
,,	Taunton	5·85	,,	Cahir, Tubrid	3·35
VI.	Bristol, Ashleydown ...	5·90	,,	Tipperary, Henry St....	2·78
,,	Ross	5·75	,,	Newcastle West	...
,,	Wem, Sansaw Hall.....	5·62	,,	Kilrush	1·21
,,	Cheadle, The Heath Ho.	4·07	,,	Corofin	1·38
,,	Bickenhill Vicarage ...	5·42	XXI.	Kilkenny, Butler House	...
VII.	Melton, Coston	5·91	,,	Carlow, Browne's Hill..	2·94
,,	Horncastle, Bucknall ...	4·46	,,	Kilsallaghan.....	6·88
VIII.	Walton-on-the-Hill.....	4·71	,,	Navan, Balrath	5·88
,,	Broughton-in-Furness..	1·52	,,	Athlone, Twyford	1·37
IX.	Wakefield, Stanley Vic.	4·63	,,	Mullingar, Belvedere ...	2·91
,,	Ripon, Mickley	5·79	XXII.	Ballinasloe	...
,,	Scarborough.....	6·12	,,	Clifden, Kylemore	2·17
X.	Mickleton.....	5·32	,,	Crossmolina, Enniscoe..	1·90
,,	Haltwhistle, Unthank..	3·62	,,	Carrick-on-Shannon ...	·38
,,	Shap, Copy Hill	1·59	XXIII.	Dowra	·71
XI.	Llanfrechfa Grange	6·57	,,	Rockcorry.....	·59
,,	Llandovery	5·18	,,	Warrenpoint	2·55
,,	Solva	4·61	,,	Newtownards	1·77
,,	Castle Malgwyn	5·32	,,	Carnlough.....	1·40
,,	Rhayader, Nantgwillt..	8·11	,,	Bushmills	2·33
,,	Carno, Tybritle	6·71	,,	Buncrana	1·85

OCTOBER, 1880.

Div.		STATIONS. [The Roman numerals denote the division of the Annual Tables to which each station belongs.]	RAINFALL. Total Fall.	Difference from average 1860–5	Greatest Fall in 24 hours. Dpth	Date.	Days on which ·01 or more fell.	TEMPERATURE. Max. Deg.	Date.	Min. Deg.	Date.	No. of Nights below 32° In shade.	On grass.
			inches	inches.	in.								
I.	ENGLAND.	Camden Square	5·78	+ 3·19	·99	9	20	66·3	2	29·6	21*	4	6
II.		Maidstone (Hunton Court)	6·82	+ 3·83	2·15	9	18	...	...	...	...	...	...
,,		Strathfield Turgiss	4·66	...	·77	26	18	66·9	1	27·2	24	5	15
III.		Hitchen	5·10	+ 2·55	1·26	6	20	60·0	5	26·0	23	6	...
,,		Banbury	4·92	+ 2·49	1·24	4	17	63·0	1	25·0	24	7	...
IV.		Bury St. Edmunds (Culford)	4·45	+ 1·74	1·46	6	18	63·0	5	27·0	24	...	...
,,		Norwich (Cossey)	5·05	+ 2·71	1·13	6	21	64·0	5	30·0	24	2	6
V.		Bridport	6·40	+ 1·37	1·18	26	16	...	...	...	...	...	...
,,		Barnstaple	6·45	+ 2·33	1·78	4	14	69·0	1,2	29·0	30	...	...
,,		Bodmin	8·03	+ 2·71	2·39	4	19	66·0	2	29·0	30	3	7
VI.		Cirencester	5·77	+ 2·28	1·35	26	15	...	...	...	...	...	...
,,		Shifnal (Haughton Hall)	4·92	+ 2·68	1·61	27	16	61·0	1	24·0	20†	9	12
,,		Tenbury (Orleton)	6·17	+ 2·94	1·96	4	13	66·5	1	22·2	24	9	10
VII.		Leicester (Town Museum)	5·43	...	1·44	4	15	60·8	2	28·1	20	5	23
,,		Boston	7·14	+ 5·02	1·65	4	14	60·0	1	27·0	20	6	...
,,		Grimsby (Killingholme)	5·84	...	1·71	27	18	60·0	1	30·0	20‡	3	...
,,		Mansfield	5·86	...	1·59	27	18	61·5	1	23·5	24	9	11
VIII.		Manchester (Ardwick)	2·31	— 1·22	1·26	28	12	62·0	1	26·0	21‡	5	...
IX.		York	3·67	+ 1·15	1·45	27	13	63·0	1	24·0	20	8	8
,,		Skipton (Arncliffe)	5·66	— 1·00	2·10	27	14	60·0	14	22·0	19	8	...
X.		North Shields	3·80	+ ·52	·85	27	23	59·0	1	27·5	22	6	6
,,		Borrowdale (Seathwaite)	3·30	—13·02	·90	25	13	...	...	...	...	...	...
XI.	WALES.	Cardiff	4·94	...	1·45	26	15	63·4	1	28·5	21	4	...
,,		Haverfordwest	5·27	+ ·08	1·50	26	12	64·0	1	24·0	23	7	13
,,		Aberdovey	...	...	...	...	...	...	...	...	...	...	...
,,		Llandudno	5·01	+ 1·05	2·23	27	13	63·3	1	30·0	22	3	...
XII.	SCOTLAND.	Cargen	·75	— 4·73	·24	18	7	62·4	1	22·4	22	8	...
,,		Hawick (Silverbut Hall)	2·67	...	·82	27	14	...	...	...	...	...	...
XIV.		Douglas Castle (Newmains)	2·10	...	·62	27	11	...	...	...	...	...	...
XVI.		Loch Long (Arddaroch)	...	...	...	...	...	...	...	...	...	...	...
,,		Kilmory	1·25	...	·33	30	9	...	...	19·0	20	18	...
,,		Mull (Quinish)	1·55	...	·58	30	15	...	...	...	...	...	...
,,		Loch Leven	1·70	— 3·28	·50	29	6	...	...	...	...	...	...
XVII.		Arbroath	2·24	— 1·45	·53	5	12	64·0	1	26·0	20	4	...
,,		Braemar	1·91	— ·84	·28	2	14	57·6	1	11·0	20	13	27
XVIII		Aberdeen	3·07	...	·42	8	21	64·0	1	25·0	19	6	...
,,		Portree	3·20	— 7·58	·47	25	19	...	...	...	...	...	...
,,		Inverness (Culloden)	3·06	+ ·40	·57	25	9	58·5	1	25·8	22	7	20
XIX.		Dunrobin	3·37	+ ·14	1·01	2	19	58·0	1	26·5	20	10	...
,,		Sandwick	4·28	— ·64	·64	2	24	60·0	17	29·2	20	6	15
XX.	IRELAND.	Cork (Blackrock)	2·72	...	·99	26	9	70·0	1	22·0	29	7	...
,,		Darrynane Abbey	...	...	...	...	...	...	...	...	...	...	...
,,		Waterford	4·80	+ ·40	2·18	27	10	63·0	1	27·0	21§	10	...
,,		Killaloe	3·88	— 1·14	1·53	26	12	72·0	1	24·0	30	8	...
XXI.		Portarlington	3·02	— 2·11	1·06	27	15	63·5	1	26·5	21	...	...
,,		Monkstown	7·12	+ 3·20	2·33	27	13	...	...	...	...	...	...
XXII.		Galway	1·11	...	·71	26	6	66·0	1	26·0	21	...	...
XXIII		Waringstown	·73	...	·53	27	7	63·0	1	19·0	21	7	17
,,		Londonderry	1·45	...	·36	18	16	59·0	1	30·0	22	2	12
,,		Edenfel (Omagh)	·67	...	·21	27	10	58·0	1	18·0	21	14	...

* And 30. † And 24, 30. ‡ And 24. § And 30.

+ Shows that the fall was above the average; — that it was below it.

METEOROLOGICAL NOTES ON SEPTEMBER.

ABBREVIATIONS.—Bar. for Barometer; Ther. for Thermometer; Max. for Maximum; Min. for Minimum; T for Thunder; L for Lightning; T S for Thunderstorm; R for Rain; H for Hail; S for Snow.

ENGLAND.

CAMDEN SQUARE.—A thick covering of S on the ground on the 20th.

STRATHFIELD TURGISS.—I have noted yearly since 1856 the earliest date of S, and the fall on the 19th instant is the *earliest.*

HITCHEN.—The coldest October on record. S on the 20th; the earliest known.

BANBURY.—High winds on 6th, 9th, 10th, and 27th. T on 6th; S on 20th.

CULFORD.—A month notable for its extremes of temperature, in which we have had a taste of both summer and winter. The fall of S on the 21st was not so heavy here as in many districts.

BODMIN.—The month was remarkable for its heavy rainfall and for the singular oscillations of the bar. Mean temp. 47°·5.

CIRENCESTER.—A wet month; two heavy falls of R in short periods. Wind principally E. and N.E. in the middle of the month, and S.W. and N.W. in the othe parts.

SHIFNAL.—Rather a strange October, remarkable for extremes both of temp. and rainfall. The sudden cold of the 20th was not accompanied by heavy S, such as fell further south, but cut down all dahlias, &c. Falls of rain exceeding 1 in. in 24 hours occurred on three occasions; that of the 26th and 27th continued without ceasing for two days and a night, the total amount being 2·64 in., and resulting in such a flood as has not occurred since 1851. Prevailing winds, N.W., N., and N.E. A great crop of acorns and hips, but no haws or horse-chestnuts; potatoes a great crop and little disease.

ORLETON.—The mean temp. of the month was more than 6° below the average, and lower than that of any October for the last 25 years. The last half of the month was very cold with severe frosts. At 3 p.m. on the 4th a great R set in, which continued till noon on the following day, when 2·08 in. had fallen. At 8 a.m. on the 26th another great fall of R set in, which continued for 40 hours, when 2·53 in. had fallen, producing the greatest flood in the River Teme (excepting that of November, 1852) that has occurred since 1795. The sky was generally cloudy, with much fog, and there were only a few fine days.

BOSTON.—The greatest rainfall ever known in one month; the next greatest being 5·73 in. in July 1851. On the 4th and 5th 2·79 in. fell in 24 hours, the greatest ever recorded. The rivers and drains have all been higher than was ever known before, and land flooded on which the water was never known to stand before.

KILLINGHOLME.—Cold and very wet, except a week of pleasant weather from 12th to 19th.

YORK.—The heavy rainfall of the 27th and 28th (1·87 in.) caused a flood up to 12¼ ft. in the river (highest known about 15 ft.) Solar halos on 4th and 19th; S and H on 20th.

ARNCLIFFE.—Very wild in night of 27th and 28th. R in the two days, 3·17 in.

NORTH SHIELDS.—Very stormy on 28th; S on five days after the 19th.

SEATHWAITE.—Snow on mountains on 18th and 27th; gale on 28th; no fall of R exceeding 1 in. in 24 hours.

WALES.

LLANDUDNO.—A dull, cold, and stormy month; rainfall 1·5 in. above the average. An excessive—I should say unprecedented—fall occurred on the 27th, accompanied by a heavy gale from the S.E., the quantity which fell in the 24 hours being 2·23 in. Mean temp. nearly 5° degree below the average.

SCOTLAND.

CARGEN.—An unusually dry month, rainfall 4·49 in. below average; severe cold from 21st to 24th. The severe storms so general between the 26th and

30th were not felt here at all. A slight covering of S on the high hills on the 29th. Mean temp, (45°) 3°·7 below the average; L on 4th and 15th.

SILVERBUT HALL.—The first half of the month was fine and mild; keen frost set in on the 17th, and continued nightly till the 23rd; on the 27th and 28th there was a terrible storm of snow, sleet, rain. and wind, causing a high flood in the Teviot. On the morning of the 22nd the temp. fell to 17°, and few living in Hawick have ever seen such a keen frost and severe snowstorm in October.

BRAEMAR.—S fell on the 18th, and after that date unusually intense frosts.

ABERDEEN.—Prevailing wind N.W., and consequently the temp. was low with cold showers of R, S, and H; rainfall above the average. The aurora was seen on four nights; lunar halos were frequent. Weather stormy and unsettled,

PORTREE.—A very mild month; first S and frost on the 20th.

CULLODEN.—Frost severe for so early in the autumn, particularly from 4th to 12th, and from the 19th to the close of the month A heavy hailstorm on 28th, and continued heavy showers throughout the day. Very little S.

SANDWICK.—The mean temp. of the month was not only 4°·7 below the average, but it was the coldest October during the last 54 years. Thus we have an uncommonly early winter after an uncommonly fine summer. The ground was covered with S during the 19th and 20th. Rainfall rather less than the average. Aurora on four nights.

IRELAND.

KILLALOE.—The great rainstorm of the 26th and 27th was less severe here than in other parts of the country. The weather was splendid from the 7th to 25th, though the temp. was low and there were several sharp frosts. Wind N. or N.E. nearly all the month.

MONKSTOWN.—A strong gale from N.E., with heavy R, T, L, and H, commenced on night of the 4th, and continued during the 5th, bringing a very heavy sea; after that a spell of bright cool weather till the 26th, when another gale set in from E N.E., which continued for nearly three days with great violence, being the severest we have experienced for many years; it was accompanied by incessant R. The fall on the 27th, 2·330 in., is the largest I have ever recorded in one day, excepting the fall of 2·335 in. on August 13th, 1874. In that case it was simply a TS; this time it was preceded and followed by heavy falls, making the altogether unparalled amount of 3·575 in. in three days.

WARINGSTOWN.—A very fine and dry month; very sharp and early frost on night of 4th; intense frost on night of 21st.

LONDONDERRY.—Month extremely favourable for agricultural purposes; the finest we have had for many years. Prevailing wind N.W.

THE COMING WINTER.

To the Editor of the Meteorological Magazine.

SIR,—In compliance with the request contained in your kind and impartial article on my "Weather Predictions," (see *Met. Mag.*, vol. xv., p. 82), I beg to say that the coming winter should be somewhat colder than (39°·2) the average of the last 40 years. I will, with your permission, give in your next number my reasons for expecting this.

And now a few words as to the mean temp. of last July. The Greenwich long average for that month, that is, for the last 109 years, is 61°·6. The actual mean of last July at Greenwich was 61°·7; consequently that month was 0°·1 warmer than the average, and, at any rate, not a cold month as some have thought.—Yours, &c.,

GEORGE D. BRUMHAM.